Index

A

Action, versus knowledge and understanding, 16-17
Advanced Center for Technology Training, Inc. (ACTT), 120, 121
Advanced Manufacturing Technology (AMT), 87
Advanced technical courses, 246-47
Affective development, and technology literacy, 206-7
Affective domain, 34, 47
AFL-CIO, 113-14
Agricultural literacy, 100, 139, 154-55
AIDS (Acquired Immune Deficiency Syndrome), 106
American Association for the Advancement of Science (AAAS), 2-3, 5, 123-24, 142, 151
American competiveness, causes for decline of, 95
American Federation of State, County and Municipal Workers, 104
American Federation of Teachers (AFT), 113, 123
American Industrial Arts Association (AIAA), 130
  and development of *Curriculum to Reflect Technology*, 20
  development of Professional Improvement Plan, 36
  name change of, to International Technology Education Association, 36
American Vocational Council,
  on agricultural literacy, 154
Amoco Corporation, 112
Apple Computer, 112
Applied knowledge, 15
ARCO, 112
Argentina, technology literacy in, 59
Artifacts, 16
Austria, technology literacy in, 59
Automatic teller machines, 86
Automation, in elementary technology education, 195

B

Barnes, James L., 52, 94-118, 176
Belgium, technology literacy in, 59
Bensen, M. James, 52, 151, 176, 177, 239
Big Bang theory, 28
Biotechnology, 277-78
Brazil, technology literacy in, 59

C

Canada, technology education in, 58, 59
Cellular communication technology, 83
Ceramic-matrix composites, 84
Chamot, Dennis, 52, 151, 176, 177
Chicago
  case study of technology education, 233-37
  district support activities, 236-37
    evolution of plan, 234
    personnel development, 234-36
China, technological literacy in, 59, 78
"City Works" program, in Minneapolis-St. Paul, 134-35
Cognitive development, and technology literacy, 203-6
Cognitive domain, 34, 46
Cohesiveness, building, in technology education, 220-21
Coleman Report, 140
Colleges and universities,
  technology education in, 40-41
  See also Teacher education
Commission on Industrial Competiveness, 95
Commission on the Reorganization of Secondary Education, development of school objectives by, 34
Communication, impact of technology on, 30
Communications technology, in elementary technology education, 195-96
Communications Workers of America, 104
Competency list approach, to technological literacy, 160-70
Composites, 30-31
Computer Integrated Manufacturing (CIM), 87
Computer literacy, 33, 139
Computer technology, 29, 221
  in elementary technology education, 194
Computer tomography, 30
Construction industry,
  impact of technology on, 30
Contingency spending, 91
Cooper Tire and Rubber Company, 97
Corporate-educational partnerships, 110, 112-13
Council for the Understanding of Technology in Human Affairs
  on technological literacy, 126-27
Council of Europe, 1980
  conference on curriculum trends, 68
Council on Technology Teacher Education (CTTE), accreditation standards of, 250
Cuba, technology literacy in, 59
Cultural literacy, 139

Index

A

Action, versus knowledge and understanding, 16-17
Advanced Center for Technology Training, Inc. (ACTT), 120, 121
Advanced Manufacturing Technology (AMT), 87
Advanced technical courses, 246-47
Affective development, and technology literacy, 206-7
Affective domain, 34, 47
AFL-CIO, 113-14
Agricultural literacy, 100, 139, 154-55
AIDS (Acquired Immune Deficiency Syndrome), 106
American Association for the Advancement of Science (AAAS), 2-3, 5, 123-24, 142, 151
American competiveness, causes for decline of, 95
American Federation of State, County and Municipal Workers, 104
American Federation of Teachers (AFT), 113, 123
American Industrial Arts Association (AIAA), 130
  and development of *Curriculum to Reflect Technology*, 20
  development of Professional Improvement Plan, 36
  name change of, to International Technology Education Association, 36
American Vocational Council,
  on agricultural literacy, 154
Amoco Corporation, 112
Apple Computer, 112
Applied knowledge, 15
ARCO, 112
Argentina, technology literacy in, 59
Artifacts, 16
Austria, technology literacy in, 59
Automatic teller machines, 86
Automation, in elementary technology education, 195

B

Barnes, James L., 52, 94-118, 176
Belgium, technology literacy in, 59
Bensen, M. James, 52, 151, 176, 177, 239
Big Bang theory, 28
Biotechnology, 277-78
Brazil, technology literacy in, 59

C

Canada, technology education in, 58, 59
Cellular communication technology, 83
Ceramic-matrix composites, 84
Chamot, Dennis, 52, 151, 176, 177
Chicago
  case study of technology education, 233-37
  district support activities, 236-37
    evolution of plan, 234
    personnel development, 234-36
China, technological literacy in, 59, 78
"City Works" program, in Minneapolis-St. Paul, 134-35
Cognitive development, and technology literacy, 203-6
Cognitive domain, 34, 46
Cohesiveness, building, in technology education, 220-21
Coleman Report, 140
Colleges and universities,
  technology education in, 40-41
  See also Teacher education
Commission on Industrial Competiveness, 95
Commission on the Reorganization of Secondary Education, development of school objectives by, 34
Communication, impact of technology on, 30
Communications technology, in elementary technology education, 195-96
Communications Workers of America, 104
Competency list approach, to technological literacy, 160-70
Composites, 30-31
Computer Integrated Manufacturing (CIM), 87
Computer literacy, 33, 139
Computer technology, 29, 221
  in elementary technology education, 194
Computer tomography, 30
Construction industry,
  impact of technology on, 30
Contingency spending, 91
Cooper Tire and Rubber Company, 97
Corporate-educational partnerships, 110, 112-13
Council for the Understanding of Technology in Human Affairs
  on technological literacy, 126-27
Council of Europe, 1980
  conference on curriculum trends, 68
Council on Technology Teacher Education (CTTE), accreditation standards of, 250
Cuba, technology literacy in, 59
Cultural literacy, 139

Curriculum models, for technology education, 253-55
Curriculum to Reflect Technology, 20-21

D

Daiber, Robert, 184, 187-211, 239
Dayton-Hudson Corporation, 112
Decisions-by-experts approach to technology education, 262
Democratic society, technological literacy as critical in, 2, 264-65
Demographic facts, and technology literacy, 88-89
Denmark, technology literacy in, 60
Descriptive characteristics approach to technological literacy, 156-60
Design focus, for technology education, 275-76
Deskilling, 102
Developing countries, technology literacy in, 76, 116
DeVore, Paul, 185-86, 251-79
Digital Equipment Corporation, 112
Disciplinary perspectives versus interdisciplinary perspectives, 17-18
Discussion, in assessing technological literacy, 209-10
Doing technology programs, 16-17
Dyrenfurth, Michael, 52-53, 138-86, 208

E

Ecological ethic, 274
Economic Development Commissions, 95
Economic literacy, 139
Economic perspectives on technological literacy, 80-93
Economy, impact of technology for, 32
Education. *See also* Technology education
  and ability to think, 35
  reassessing focus of, 263
  technology as challenge for, 33-35
  technology literacy as mandate for, 26-27
Educational Policies Commission, development of school objectives by, 34
Educational perspectives on technological literacy, 119-37
  of American Association for Advancement of Science, 123-24
  of American Federation of Teachers, 123
  community-based education, 134-35
  of Council for Understanding of Technology in Human Affairs, 126-27
  educational responses on the international scene, 135
  education of workforce, 120-21
  engineering education perspective, 133-34
  of Humanities and Technology Association, 125
  of individual states and councils, 130-31
  of International Technology Education Association, 127-29
  K-12 perspectives, 131-32
  of National Association for Science, Technology and Society, 125
  of National Education Association, 123
  of Phi Delta Kappa, 122
  and the social conscience, 121
  teacher education, 132
  of Technology Education Division of the AVA, 129-30
  technologically literate society as goal in, 135-37
Egypt, technology literacy in, 60
Electronically enhanced infrared scopes, 30
Electron-beam lithography, 30
Elementary school, 38
  technology education in, 188-97
Employee interests, and technology, 84
Enabling ethic, 274
Engineering Concepts Curriculum Project, 160-61
Engineering education perspective on technology education, 133-34
England (United Kingdom)
  Craft, Design and Technology programs in, 135
  technology literacy in, 60, 67-68
Entrepreneurship, 52
Environment,
  impact of technology on, 22, 266-68
Erekson, Thomas L., 52, 94-118, 151
Ethics, 268-274

F

Facility redesign, and technology education, 218-19
Fairchild Aircraft, 112
Fax services, 86
Federal Express, 86
Finland, technology literacy in, 60
First World Assembly on Technology Education, 36-37
Flexible Manufacturing Systems (FMS), 87
France, technology literacy in, 60
Future ethic, 274
Future technologies, in elementary technology education, 196

G

GAIA hypothesis, 269-70, 279
General Electric, 112
Gene splicing, 84
Georgia Pacific, 112
Germany, technology literacy in, 61-62
Ghana, technology literacy in, 62
Global ethic, 274
Globalization, 54, 96

Government officials,
technological literacy of, 106
Government perspective on technology literacy
civil sector, 105-8
military sector, 108-9
Graphic approach, to technological literacy, 170
Guinea, technology literacy in, 62

H

Hatch, Larry, 185, 239-50
Hewlett-Packard, 97, 112
Holistic focus, on technological literacy, 273
Holmes Group, 241
Home economics program, 14
Honeywell, 112
Human capabilities, future needs for, 109-10
Humanistic ethic, 274
Humanities and Technology Association,
on technological literacy, 125
Human perceptions, shift in, on Earth, 270
Hungary, technology literacy in, 63

I

IBM, 112
Illinois Plan, 36
implementation of, in Chicago schools, 234
Image, as problem in technology education,
219-20
India, technological literacy in, 63, 78
Industrial-scientific paradigm, 268-69
Industry and Technology Education Project, 36
Institutional stress, and technology education,
83
Instructional technology, 123
Intellectual property, 82
Interdisciplinary perspectives versus
disciplinary perspectives, 17-18
International Association for Evaluation of
Educational Achievement on technological
literacy, 6
International perspectives on technological
literacy, 54-79
International Technology Education
Association (ITEA), 36, 130
on information technology, 176
on technological literacy, 6, 40, 76-77, 127-29
Intrapreneurship, 52
Italy, technology literacy in, 63

J

Jackson's Mill Industrial Arts Curriculum
Project, 21, 36, 40, 45, 47
Japan, technological literacy in, 63, 78
Job loss fears, and technology, 102
Jones, Ronald, 185, 239-50
Junior high school. *See* Middle school/
junior high school

K

Kenya, technological literacy in, 63, 78
Knowledge, versus action, 16-17
Knowledge bases in teacher education,
241-243, 248-250
Kozak, Michael R., 28-50
Kuwait, technology literacy in, 63

L

Labor market shortages, and technological
change, 87
Labor sector, perspective of, on technological
literacy, 94-105
Labor unions, 96-97, 103-5, 113-14, 239
Language development, and technology
literacy, 203-7
Lasers, in elementary technology education,
195
Learning, worth of, 265-66
Learning activity packets (LAPs), 218
Learning domains, 34-35
affective, 34, 47
cognitive, 34, 46
psychomotor, 34, 47
Liberal education, proliferation of Science/
Technology/Science courses in, 15
Literacy
Canadian definition of, 58
as component of technological literacy, 15
definition of, 138-40
and the new awareness, 270-73
Litherland, Les, 184, 187-211, 239
Lovelock, James E., 269-70

M

Machinists Union, 113-14
Macroeconomics, and public sector choice, 90
Magnetic resonance imaging, 30
Manufacturing, as focus of technological
progress, 86-87
Market contestability, 90
Market niche, 83-86
Marqulis, Lynn, 269-70
Mathematical literacy, 140
Matrix organization, 52
Mauritius, technology literacy in, 64
Meany, George, Center for Labor Studies, 114
Medical technology, 30, 32
Meta-technology, 29, 31
Mexico, technology literacy in, 64
Mid-America Vocational Curriculum
Consortium (MAVCC), 218
Middle school/junior high school, 38-39
technology education in, 198-202
Military technology, 108-9
Minneapolis-St. Paul, "City Works" program in,
134-35
Morocco, technology literacy in, 64

N

NASA, 112
National Association for Science, Technology and Society (NASTS), on technological literacy, 125
National Conference on Technological Literacy, First, 11
National Council for the Accreditation of Teacher Education (NCATE), accreditation standards of, 250
National Education Association (NEA), on technological literacy, 123
National Occupational Information Coordinating Committee, 89
National Research Council, on agricultural literacy, 154
National Science Foundation (NSF), on technological literacy, 187
National Science Teachers Association (NSTA), on technology as component of scientific literacy, 19
Netherlands, technology literacy in, 64
New Liberal Arts programs, 3-4, 208
New York Technology Education Curriculum, 131-32
Nigeria, technology literacy in, 64

O

Occupational and Practical Arts Futuring Project (New York State), 36
Office of Technology Assessment (OTA), 107-8
Oklahoma technology education, 227-32
Omnibus Trade and Competiveness Act (1988), 107, 116-17
Optical fiber technology, 30, 83
Options, 87
Organization for Rehabilitation through Training (ORT), 120-21

P

Package-deal approach to technology education, 214-15
Pakistan, technology literacy in, 64
Paper and pencil exercises, in assessing technological literacy, 210
Paradigm shifts, 268
Patents, 97
Phi Delta Kappa, on technological literacy, 122
Photographic emulsions, 30
Physiotechnology, 277
Power on! New Tools for Teaching and Learning (OTA), 5
Private sector, perspective of, on technological literacy, 94-105
Problem solving in technology, 15
Problem-solving activities, in assessing technological literacy, 210
Problem-solving model for technology transfer, 110-11
Problem-solving skills
  in assessing technological literacy, 209-10
  in elementary technology education, 194
Problem-solving strategies, as key to technology education, 190-92
Productivity, decline of U.S. industrial, 29
Program monitoring, for technology education programs, 222-24
Progress, and technology, 266
Project 2061 (AAAS), 123-24, 142, 151
Psychomotor domain, 34, 47
Public interest, in technological literacy, 89-90
Public schools
  pressure on, and market niching, 83
  technology education in, 37
    for elementary studies, 38, 188-97
    for high school, 40, 202-9
    for middle school, 38-39, 198-202
Pupils' Attitude Toward Technology (PATT) conferences, 4, 37, 135

Q

Quality circles, 52
Quality of life, impact of technological illiteracy on, 262-63

R

Radio telescopes, 30
Religious pilgrimage, availability of, through technology, 32
Remote vending facilities, 86
Research Triangle Institute, 89-90
Responsibility, and ethics, 271-73
Robb, Janet, 28-50
Robotics, in elementary technology education, 195

S

San Francisco, Exploratorium in, 134
Scarborough, Jule D., 51, 54-79, 151, 175, 176, 177, 239
School-based technology education programs. *See also* Technology education and assessing technology literacy, 209-10
  in elementary school, 188-97
  implementation of, 184, 187-211
  in middle school/junior high schools, 198-202
  in senior high school, 202-9
Schools. *See also* Education obligation of, to teach ability to think, 35
  purposes of American, 8, 34
School Shop, 70

Science, distinction between technology and, 67, 142
Science, Technology,
and Society programs, 13-14, 41, 208
integration of, into curriculum, 125
proliferation of, in liberal arts colleges, 15
Science for effective citizenship, 18
Scientific literacy, 11, 140, 154
dimensions of, 6
evolution of, 18-19
technology as component of, 19
Self-interest, functioning of, and technological change, 87-89
Semiconductors, 84
Sensorimotor development, and technology literacy, 206
Service production, and technological progress, 86
Sierra Leone, technology literacy in, 64
Slogan, technological literacy as, 11-12
Social service, government exploitation of technology in providing, 106-7
Society, nature of life in, and technology literacy, 2-3
Solow, Robert, 85
Southeast Technology Education Association, 130
Space technology, 31
Spain, technology literacy in, 64
Specialization, in technology-related studies, 18
Sputnik, and evolution of scientific literacy, 18
Sri Lanka, technology literacy in, 64
Stacy, Roger, 185, 212-33, 239
Stevens, David W., 51, 80-93, 151, 177
Sudan, technology literacy in, 65
Symposium 80: Technology Education (Eastern Illinois University), 119
Syria, technology literacy in, 65
Systems analysis, 16
Systems approach, to technology education content, 47-48

T

Talking about technology programs, 16-17
Tanzania, technology literacy in, 65
Teacher education
challenge for, 239-50
growing diversity in, 240-41
implications of technological literacy for, 185, 239-50
knowledge bases in, 241
general studies, 242-43
knowledge of teaching, 248-49
pedagogical/clinical knowledge and skills, 249-50
technical base, 243-48
state mandates for, 107
for technology education, 41-45, 132
professional sequence, 43
technical sequence, 43-46
Teamwork, 52
TECA, corporate contest judges and evaluators, 113
Technical assistance, providing for technology education programs, 224, 225
Technical Foundation of America, 36
Technical means, redirection of, 273-75
Technological activity, components of, 150
Technological capability, knowledge in practice through, 25-26
Technological change, 257
processes of, 82-84, 87-91
Technological decision-making, taxonomy of capability for, 24-25
Technological illiteracy, 261-66
Technological knowledge, diffusion of, 82-83
Technological literacy.
See also specific topics, such as Affective Development.
addressing challenge, 275
ambiguity of term, 11, 13
assessing, 209-10
challenges and promises for, 24-27
chapter author perspectives on, 172
characteristics of, 7, 70, 159
as concept, 10, 12-13
Congressional commitment to, 89
in context, 8-9, 14-16
definitions of, 1, 11-14, 71-75, 80, 92, 120, 139-40, 152-53, 177-78, 178-79
and dehumanization/humanization, 3
in the design decade, 255
development of new paradigm in, 7
as education mandate, 26-27
evolution of, 8, 10-27, 20-21
factors influencing development of, 117
foundation for change in 256-61
as goal, 6, 13
government perspective on
civil sector, 105-8
military sector, 108-9
heuristic value of, 13
implications for, 174-77
implications for practice, 184-86
implications for teacher education, 185, 239-50
importance of, 8, 10, 95
international development of, 21-22
international perspectives on, 54-79
on the job needs for, 103-5
key perspectives on, 51-53
knowledge in practice through, 25-26
literacy as component of, 15, 140
model of, 179-83

myths and misconceptions of, 16-22
nature of, 152-71
and nature of jobs/competiveness/workforce literacy, 4-5
and nature of life in society, 2-3
natures and challenges of, 10-27
and New Liberal Arts (NLA) directions, 3-4
"new" versus "old," 75-76
as program, 13-14
redirection of technical means, 273-75
rewards for, 92-93
significance, importance and justification of, 1-5
as slogan, 11-12
social/cultural impacts of, 23-24
spread of concept of, 75
synthesized, 138-86
meaning and evolution of literacy, 138-40
nature of technological literacy, 152-71
nature of technology, 140-52
and technology as discipline, 5
transitioning to new reality, 252-53
in the 21st century, 251-52
Technological literacy model, adaptation of, 208-9
Technologically literate society, as educational goal, 135-37
Technologically literate person, characteristics of, 162
Technological progress
characteristics of sustained, 85
manufacturing as focus of, 86-87
social consequences of, 84
Technological Systems course, 244-45
Technology
applied knowledge in, 15
arenas/fields/systems in, 144-46
challenge of, 29-33
chapter author perspectives on, 151-52
characteristics and processes of, 148-51
as component of scientific literacy, 19
as component of technological literacy, 15-16
context of, 142-44
definition of, 13, 14-15, 32-33, 69-70, 146-48, 150-51, 152
as a discipline, 5
distinction between science and, 67, 142
education about. *See* Technology education
as educational challenge, 33-35
and employee interests, 84
and environment, 22, 266-68
and ethics, 268-70
exponential growth of, 30, 50
impact of, on world, 96-97
and job loss fears, 102
nature of, 140-52
organizing study of, 109-15
problem solving in, 15
and progress, 266
talking about, versus doing, 16-17
Technology Achievement Test development of, 68
Technology education, 13-14, 207-8.
See also School-based technology education programs; Technological literacy
in 21st century, 275-76
in Canada, 58
central goal of, 184
in college and university
programs, 40-41
curriculum structure for, 46
content of, 46-47
integrating systems, 49
methodology in, 49
systems approach of, 47-48
in elementary school, 38, 188-97
in action, 192-96
automation, 195
communications technology, 194, 195-96
effectiveness of, 189
future for, 197
future technologies, 196
goal of, 197
lasers, 195
problem-solving skills, 194
problem-solving strategies as key, 190-92
real versus simulated, 190
robotics, 195
elements of effective practice, 9, 28-50
goal of, 50, 187
in high school, 40, 202-9
adaptation of the technological literacy model, 208-9
approaches to program implementation, 207-8
growth and development for technological literacy, 203-7
historical developments and influences, 36-37
in middle school/junior high school, 38-39
activity focus in, 200-2
competencies in, 198
expansion of, 199-200
first course in, 199
in year 2050, 200
new mission for, 277-79
in public schools, 37-40
teacher preparation programs, 41-45
significance of, 187-88
support activities for, 212-38
building cohesiveness, 220-21
case study of local approach, 233-37
case study of state approach, 227-32
image in, 219-20
insuring continuing input, 221
key elements of technology education plans, 217-18

key methodological questions, 218-19
local perspective on, 215-16
monitoring programs, 222-24
program/curriculum development mechanisms, 216-17
providing technical assistance, 224, 225
state perspective on, 214-15
teacher preparation programs for, 41-45
professional sequence, 43
technical sequence, 43-46
as term, 35-36
transition in, 276-77
Technology Education Advisory Council (TEAC)
on breakthrough on technology education, 137
on citizen participation in technology education, 136
on teacher education, 202-3
Technology Education Demonstration Program, 116-17
Technology Education Division of the American Vocational Association on concept of technology literacy, 76-77
technological literacy as goal of, 6
Vocational Association on technological literacy, 129-30
Technology in Society courses, 247-48
Technology literacy training, 120-21
definition of, 121
Technology Student Association, utilization of, for technology education programs, 226
Technology Task Force 2000, 216
Technology teacher education programs. *See* Teacher education
Technology transfer problem solving model for, 110, 111
Telescopes, 30
Temporary help agencies, 88
TESA, corporate contest judges and evaluators, 113
Think, ability to, 35
Thode, Terry, 184, 187-211, 239
Tobin, Harry, 185, 212-38, 239
Todd, Ronald D., 10-27, 176
"Tools for Tomorrow" (course), 245
Tunisia, technology literacy in, 65
21st Century Technology Task Force, 216, 227

U

Underemployment, and meta-technology, 29
Understanding versus action, 17
Unemployment, and meta-technology, 29
Unisys Corporation, 98
United Auto Workers, 103
United Kingdom. *See* England
United Nations Educational, Scientific and Cultural Organization (UNESCO) study of, on technology education, 56-58, 69
United States, technology literacy in, 65
United Steelworkers, 104
Uruguay, technology literacy in, 65
U.S.S.R., technology literacy in, 66

V

Vendor contracting, 88
Venezuela, technology literacy in, 66
Volvo, 102-3

W

White collar workforce, growth of, 96
Wisconsin, technology education in, 131, 133-34
Wisconsin Industrial Education Association, 130
Wisconsin Technology Education Association, 130
Women, utilization of technology by, 31-32
Work, changes in nature of, 102-3
Workers' Technology Bill of Rights, 115
Workforce
and changes in nature of work, 102-3
characteristics of, 97
future needs for human capabilities, 109-10
future needs for skills/competencies, 110
and job loss fears, 102
and on the job needs for technological literacy, 103-5
technological education of, 120-21
trends in, 99-105
Workplace of the future, development of, 52

Z

Zaire, technology literacy in, 66